UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
VIANA DI PRISCO, GERMAN

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12/05/2007*.
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.
     4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-14* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
     a)☐ All   b)☐ Some * c)☐ None of:
        1.☐ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____.
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1,2 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by

Alferness et al (United Sates Patent No.: 5,555,396).

Consider claim 1, Alferness et al discloses a method for managing a queue of

packets using queue sets data structures, the method comprising:

transforming a plurality of consecutive packets (multiple message segments

represented by queue entries 60, 62 and 64) into a queue set data structure based on a

target queue set data structure size (the size of the queue set data structure depends

on the number of queue entries), the plurality of consecutive packets being associated

with the queue (consecutive queue entries 60, 62 and 64 belong to queue B) (figures 1

and 3 and column 3, line 63 – column 4, line 65) ; and

performing a queuing operation on the queue set data structure, the queuing operation

treating the queue set data structure as a single entity, such that the queuing operation

is performed on each of the plurality of consecutive packets in the queue set data

structure (one queue can be enqueued and dequeued as a single entity) (figure 3,

abstract, and column 3, line 63 – column 5, line 9).

Consider claim 2 and as applied to claim 1, Alferness et al further discloses determining a size of each of the plurality of consecutive packets; allocating the plurality of consecutive packets to the queue set data structure based on a target queue set data structure size according to the consecutive packet sizes, the target queue set data structure size being approximate to a largest supported packet length of the queue (the number of queue entries depends on the size of the message (data) in the queue and the queue set data structure size will depend on the number on entries as defined by the count field (figure 3, abstract and column 4 line 66-column 5, line 9).

Consider claim 6 and as applied to claim 1, Alferness et al further discloses enqueueing and dequeueing (column 4, lines 48-50).

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

5.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

6.   Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alferness

et al (United Sates Patent No.: 5,555,396) as applied to claim 1 above, and further in

view of Yin et al (United States Patent No.: US 6,810,012 B1) and of Giroux et al

(United States Patent Application Publication No.: US 2002/0044529 A1).

        Consider claim 3 and as applied to claim 1 above, Alferness et al does not

explicitly disclose the claimed invention.

        In the same field of endeavor Yin et al clearly discloses determining a queue

service interval for performing queuing operations on queue sets based upon a desired

data rate (column 3 lines 13-15); wherein performing the queuing operation on the

queue set data structure related to the queue further comprises: performing a first

queuing operation on a first queue ser related to the queue, delaying a period of time

equivalent to the queue service interval, and performing a subsequent queuing

operation on a second queue set data structure related to the queue(column 3 lines 44-

46).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Yin et al in the system of Alferness et al in order to ideally service each queue set.

Nonetheless the combination of Alferness et al and Yin et al fails to teach that the determination of the queue service interval is based upon a target queue set data structure size.

In the same field of endeavor Giroux et al discloses, determining the queue service interval based upon a target queue size (paragraph [0033]).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine the queue service interval based upon a target queue size as disclose by Giroux et al in the system of Alferness et al as modified by Yin et al in order to ensure bandwidth allocation.

7.   Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alferness et al (United Sates Patent No.: 5,555,396) as applied to claim 3 above, in view of Yin et al (United States Patent No.: US 6,810,012 B1) and of Giroux et al (United States Patent Application Publication No.: US 2002/0044529 A1) and of Aweya et al (United Sates Patent No.: 7,047,312 B1)) and further in view of Reeser et al (United Sates Patent No.: 6,789,050 B1) .

Consider claim 4 and as applied to claim 3 above, the combination of Alferness et al, Yin et al and Giroux et al does not specifically disclose determining an average queue set size for the queue set over a period of time; and adjusting the queue service

interval based upon a difference between the average queue set size and the target

queue set size.

In the same field of endeavor Aweya et al discloses detecting congestion by

taking the difference (comparing) the average queue size with the target queue size

(pre-determined threshold) (column 5, lines 22-30).

Therefore it would have been obvious to a person of ordinary skill in the art at the

time the invention was made to take the difference between the average queue set size

and the target queue set size as disclosed by Aweya et al in the system of Alferness et

al as modified by Yin et al and further modified by Giroux et al in order to determine

congestion.

Also In the same field of endeavor Reeser et al discloses adjusting the queue

service interval (service time) based upon congestion (column 3 lines 1-9).

Therefore it would have been obvious to a person of ordinary skill in the art at the

time the invention was made to adjust the queue service interval based on congestion

as disclosed by Reeser et al in the system of Alferness et al as modified by Yin et al and

further modified by Giroux et al in and Aweya et al in order to implement flow control

without having to discard packets.

8.   Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alferness

et al (United Sates Patent No.: 5,555,396) as applied to claim1 above, and further in

view of Sriram (United Sates Patent No.: 5,463,620).

Consider claim 5 and as applied to claim 5 above, Alferness et al does not

specifically disclose that performing the queuing operation further comprises:

shaping traffic flow of the queue set data structure at a rate for transmission of data

from the queue.

In the same field of endeavor Sriram discloses shaping traffic flow of the queue

set at a rate for transmission of data from the queue (figure 5 and column 5, lines 51-

60).

Therefore it would have been obvious to a person of ordinary skill in the art at the

time the invention was made to shape traffic flow as disclosed by Sriram in the queue

set data structure of Alferness et al in order to guarantee a certain amount of bandwidth.

9.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Alferness

et al (United Sates Patent No.: 5,555,396) as applied to claim 1 above, and further in

view of Parthasarathy (United States Patent No.: US 6,826,182 B1).

Consider claim 7 and as applied to claim 1 above, Alferness et al does not

specifically teach the claimed limitations.

In the same field of endeavor Parthasarathy discloses disclose determining that

each queue of a plurality of consecutive queues is the same(identical message queues)

(column 5 line 6-12); using one representative queue to represent the plurality of

consecutive queues (in figure 3b composite queue 35 in figure 3b), a replication count

of the queue being equivalent to the number of queues in the plurality of consecutive

queues (multiple read cursor RCl-n)(figure 3b and column 5 lines14-16); and performing

a queuing operation on the representative queue, such that the queuing operation is performed on each of the plurality of consecutive queues (column 5 lines 45-49).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Parthasarathy for replicating queues in the system of Alferness et al in order to reduce overhead and to make efficient use of available bandwidth between network points.

10.   Claims 8, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yin (United States Patent No.: 5,926,458) in view of Alferness et al (United Sates Patent No.: 5,555,396).

Consider claim 8 Yin discloses a system for queue management, comprising: a queue set data structure generator configured for transforming a plurality of consecutive packets into a queue set data structure based on a target queue set data structure size, the plurality of consecutive packets being associated with a queue (buffer controller transforms incoming data packets into queues 46-52 based on the finite size on the queues, when queues are full packets may be dropped), the queue set data structure generator further configured for generating a notification when a queue set data structure is ready for scheduling (via communication line 56, packet scheduler is kept informed of the status of each queue which is used in determining the scheduling) ; and a scheduler (packet scheduler 28) communicatively coupled to the queue set data structure generator to receive the notification, the scheduler configured for performing a queuing operation on the queue set data structure, the queuing operation treating the queue set data structure as a single entity, such that the queuing operation is performed

on each of the plurality of consecutive packets in the queue set data structure (figure 2

and column 4, lines 18-64).

However Yin does not specifically disclose that the queuing operation treats the

queue set data structure as a single entity, such that the queuing operation is performed

on each of the plurality of consecutive packets in the queue set data structure.

In the same field of endeavor Alferness et al discloses performing a queuing

operation on the queue set data structure, the queuing operation treating the queue set

data structure as a single entity, such that the queuing operation is performed on each

of the plurality of consecutive packets in the queue set data structure (one queue can

be enqueued and dequeued as a single entity) (figure 3, abstract, and column 3, line 63

– column 5, line 9).

Therefore it would have been obvious to a person of ordinary skill in the art at the

time the invention was made to perform a queuing operation as disclosed by Alferness

et al in the system of Yin with the purpose of increasing the efficiency of message

transfer.

Consider claim 9 and as applied to claim 8 Alferness et al further discloses

determining a size of each of the plurality of consecutive packets; allocating the plurality

of consecutive packets to the queue set data structure based on a target queue set data

structure size according to the consecutive packet sizes, the target queue set data

structure size being approximate to a largest supported packet length of the queue (the

number of queue entries depends on the size of the message (data) in the queue and

the queue set data structure size will depend on the number on entries as defined by

the count field (figure 3, abstract and column 4 line 66-column 5, line 9).

Consider claim 13 and as applied to claim 8, Alferness et al further discloses

enqueueing and dequeueing (column 4, lines 48-50).

11.   Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yin

(United States Patent No.: 5,926,458) in view of Alferness et al (United Sates Patent

No.: 5,555,396), and further in view of Yin et al (United States Patent No.: US 6,810,012

B1) and of Giroux et al (United States Patent Application Publication No.: US

2002/0044529 A1).

Consider claim 10 and as applied to claim 8 above, Yin as modified by Alferness

et al and further modified by Yin et al and Giroux et al does not specifically teach the

claimed limitations.

In the same field of endeavor Yin et al discloses determining a queue service

interval for performing queuing operations on queue sets based upon a desired data

rate (column 3 lines 13-15); wherein performing the queuing operation on the queue set

data structure related to the queue further comprises: performing a first queuing

operation on a first queue ser related to the queue, delaying a period of time equivalent

to the queue service interval, and performing a subsequent queuing operation on a

second queue set data structure related to the queue(column 3 lines 44-46).

Therefore it would have been obvious to a person of ordinary skill in the art at the

time the invention was made to combine the teachings of Yin et al in the system of Yin

as modified by Alferness et al in order to ideally service each queue set.

Nonetheless the combination of Yin, Alferness et al and Yin et al fails to teach that the determination of the queue service interval is based upon a target queue set data structure size.

In the same field of endeavor Giroux et al discloses, determining the queue service interval based upon a target queue size (paragraph [0033]).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to determine the queue service interval based upon a target queue size as disclose by Giroux et al in the system of Yin as modified by Alferness et al and by Yin et al in order to ensure bandwidth allocation.

12.   Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yin (United States Patent No.: 5,926,458) in view of Alferness et al (United Sates Patent No.: 5,555,396), and of Yin et al (United States Patent No.: US 6,810,012 B1) and of Giroux et al (United States Patent Application Publication No.: US 2002/0044529 A1), and further in view of Reeser et al (United Sates Patent No.: 6,789,050 B1).

Consider claim 11 and as applied to claim 10 above, Yin as modified by Alferness et al does not specifically teach the claimed limitations.

In the same field of endeavor Aweya et al discloses detecting congestion by taking the difference (comparing) the average queue size with the target queue size (pre-determined threshold) (column 5, lines 22-30).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to take the difference between the average queue set size and the target queue set size as disclosed by Aweya et al in the system of Yin as modified by Alferness et al and by Yin et al and further modified by Giroux et al in order to determine congestion.

Also In the same field of endeavor Reeser et al discloses adjusting the queue service interval (service time) based upon congestion (column 3 lines 1-9).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to adjust the queue service interval based on congestion as disclosed by Reeser et al in the system of Yin as modified by Alferness et al and by Yin et al and by Giroux et al in and further modified by Aweya et al in order to implement flow control without having to discard packets.

13.   Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yin (United States Patent No.: 5,926,458) in view of Alferness et al (United Sates Patent No.: 5,555,396) as applied to claim 8 above, and further in view of Sriram (United Sates Patent No.: 5,463,620).

Consider claim 12 and as applied to claim 8 above, Yin as modified by Alferness et al does not specifically teach the claimed limitations.

In the same field of endeavor Sriram discloses shaping traffic flow of the queue

set at a rate for transmission of data from the queue (figure 5 and column 5, lines 51-

60).

Therefore it would have been obvious to a person of ordinary skill in the art at the

time the invention was made to shape traffic flow as disclosed by Sriram in the system

of Yin as modified by Alferness et al in order to guarantee a certain amount of

bandwidth.

14.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yin

(United States Patent No.: 5,926,458) in view of Alferness et al (United Sates Patent

No.: 5,555,396) as applied to claim 8 above, and further in view of Parthasarathy

(United States Patent No.: US 6,826,182 B1).

Consider claim 14 and as applied to claim 8 above, Yin as modified by Alferness

et al does not specifically teach the claimed limitations.

In the same field of endeavor Parthasarathy discloses disclose determining that

each queue of a plurality of consecutive queues is the same(identical message queue)

column 5 line 6-12); using one representative queue to represent the plurality of

consecutive queues (in figure 3b composite queue 35 in figure 3b), a replication count

of the queue being equivalent to the number of queues in the plurality of consecutive

queues (multiple read cursor RCI-n)(figure 3b and column 5 lines14-16); and performing

a queuing operation on the representative queue, such that the queuing

operation is performed on each of the plurality of consecutive queues (column 5 lines 45-49).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Parthasarathy for replicating queues in the system of Yin as modified by Alferness et al in order to reduce overhead and to make efficient use of available bandwidth between network points.

Response to Arguments

15.   Applicant's arguments with respect to claims 1, 2 and 8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

16.   Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

> Commissioner for Patents
> P.O. Box 1450
> Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

> Customer Service Window
> Randolph Building
> 401 Dulany Street
> Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GERMAN VIANA DI PRISCO whose telephone number is (571)270-1781. The examiner can normally be reached on Monday through Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duc Nguyen can be reached on (571) 272-7503. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

German Viana Di Prisco
February 29, 2008

/DUC NGUYEN/

Supervisory Patent Examiner, Art Unit 2617